

EXHIBIT H

02-23-05

PTO/SB/30 (08-00)

Approved for use through 10/31/2002. OMB 0651-0034
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REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL

Subsection (b) of 35 U.S.C. § 132, effective on May 29, 2000, provides for continued examination of an utility or plant application filed on or after June 8, 1995. See The American Inventors Protection Act of 1999 (AIPA).

Application Number	10/105,034
Filing Date	March 21, 2002
Examiner Name	Nguyen, Than Vinh
First Named Inventor	Steven R. Kleiman et al.
Group Art Unit	2187
Attorney Docket Number	112056-0126

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application.
NOTE: 37 C.F.R. § 1.114 is effective on May 29, 2000. If the above-identified application was filed prior to May 29, 2000, applicant may wish to consider filing a continued prosecution application (CPA) under 37 C.F.R. § 1.53 (d) (PTO/SB/29) instead of a RCE to be eligible for the patent term adjustment provisions of the AIPA. See Changes to Application Examination and Provisional Application Practice, Interim Rule, 65 Fed. Reg. 14865 (Mar. 20, 2000), 1233 Off. Gaz. Pat. Office 47 (Apr. 11, 2000), which established RCE practice.

1. Submission required under 37 C.F.R. § 1.114

- a. ☐ Previously submitted
- i. ☐ Consider the amendment(s)/reply under 37 C.F.R. § 1.116 previously filed on _____
(Any unentered amendment(s) referred to above will be entered).
- ii. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- iii. ☐ Other _____
- b. Enclosed
- i. ☒ Amendment/Reply
- ii. ☐ Affidavit(s)/Declaration(s)
- iii. ☒ Information Disclosure Statement (IDS)
- iv. ☐ Other _____

2. Miscellaneous

- a. ☐ Suspension of action on the above-identified application is requested under 37 C.F.R. § 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 C.F.R. § 1.17(i) required)
- b. ☐ Other _____

3. Fees

- The RCE fee under 37 C.F.R. § 1.17(e) is required by 37 C.F.R. § 1.114 when the RCE is filed.
any deficiencies in
- a. ☒ The Director is hereby authorized to charge the following fees, or credit any overpayments, to Deposit Account No. 03-1237
- i. ☒ RCE fee required under 37 C.F.R. § 1.17(e)
- ii. ☐ Extension of time fee (37 C.F.R. §§ 1.136 and 1.17)
- iii. ☐ Other _____
- b. ☒ Check in the amount of \$790 enclosed (= RCE fee)
- c. ☐ Payment by credit card (Form PTO-2038 enclosed)

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Name (Print /Type)	James M. Behmke	Registration No. (Attorney/Agent)	51,448
Signature	<i>James M. Behmke</i>	Date	February 22, 2005

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express mail in an envelope addressed to: Mail Stop RCE, Commissioner For Patents, Box 1450, Alexandria, VA 22313-1450, or facsimile transmitted to the U.S. Patent and Trademark Office on 2/22/05

Name (Print /Type)	Elaine Cruz	Date	February 22, 2005
Signature	<i>Elaine Cruz</i>		

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PATENTS
112056-0126
P01-1108

REMARKS

This Preliminary Amendment is filed with a Request for Continued Examination filed on even date herewith in response to the Final Office Action mailed on November 19, 2004. All objections and rejections are respectfully traversed.

Claims 17-38, and 42-83 are in the case.

Claims 17-19, 24, 26-27, 34, 42-43, 45-54, 56, 64-70, 72, 74, 76, and 81-83 have been added to better claim the invention.

At paragraph 3 of the Office Action, the title of the invention was objected to as being non-descriptive. A new title has been provided, and the title is believed to be in allowable condition.

At paragraph 4 of the Office Action, Examiner points out that the reference "DAVID HITZ et al" on the IDS filed 5/22/03 was not considered because it lacks a date. Applicant has filed herewith a new IDS with the date of publication for the Hitz reference, namely, March 1995. Applicant directs Examiner to the section entitled "Preface to the Reader," which states, "This paper reflects the nomenclature and product characteristics in March 1995." Accordingly, Applicant respectfully requests that the "DAVID HITZ et al" reference be considered prior art for this current application.

At paragraph 5 of the Office Action, claims 47, 50, and 83 were rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter on the grounds that electromagnetic signals set out in these claims are not tangibly embodied.

PATENTS
112056-0126
P01-1108

The present invention, as set out in representative claim 47, comprises in part:

47. Electromagnetic signals propagating on a computer network, comprising: the electromagnetic signals carrying *instructions for execution in a processor for the practice of the method of*,

buffering a plurality of write requests associated with data blocks for a single write transaction;

defining a group of storage blocks, the group comprising a plurality of storage blocks configured in a plurality of parallel stripes in each of a plurality of storage devices; and

mapping each data block with a respective one of the storage blocks across the plurality of stripes, for transmitting the mapping to a storage device manager for processing of the single write transaction.

Applicant respectfully urges that the novel method steps are tangibly embodied in the electromagnetic signals propagating on the computer network. Further, Applicant respectfully urges that the embodiment of electromagnetic signals for transfer of *instructions for execution in a processor for the practice of the method of* between computers fully satisfies all requirements of 35 U.S.C. 101, and all requirements set out in the MPEP.

That is, Applicant respectfully urges that embodiment of the instructions in electromagnetic signals meets all of the requirements of 35 U.S.C. § 101, especially as clarified by MPEP 2106 IV, B, 1(c) at page 2106 of MPEP 8th Edition Incorporating Revision No. 2. (hereinafter MPEP 2106 IV, B, 1(c)). Further, MPEP 2106 IV, B, 1(c) states, at page 2106:

“However, a signal claim directed to a practical application of electromagnetic energy is statutory regardless of its transitory nature, see *O'Reilly* 56 U.S. at 114-19; *In re Breslow*, 616 F. 2d 516, 519-21, 205 USPQ 221, 225-26 (CCPA 1980).”

In the case *In re Breslow* claims were permitted by the Court (CCPA) to chemical species which are transient in nature, and cannot be separated out of the mixture in which

PATENTS
112056-0126
P01-1108

they are created. The MPEP cites this patentability of transitory phenomena in chemical reactions in support of the statement by the MPEP, "However, a signal claim directed to a practical application of electromagnetic energy is statutory regardless of its transitory nature."

The important point for patentability is the practical application of electromagnetic energy. And a practical application of electromagnetic energy is transmission of a computer program over a computer network, where the computer program is for the practice of a novel method. This practical application of electromagnetic energy is patentable subject matter, as explained by MPEP 2106 IV, B, 1(c).

A copy of *In re Breslow* from 205 USPQ 221 is attached to this Amendment, for the convenience of the Examiner.

Applicant respectfully urges that imbedding instructions for execution on a processor in an electromagnetic signal propagating on a computer network meets the practical application requirements of 35 U.S.C. § 101 and of MPEP 2106 IV, B, 1(c), and that claim 47 therefore claims statutory subject matter. Also, Applicant respectfully urges that claims 50 and 83 claim statutory subject matter under 35 U.S.C. § 101 and MPEP 2106 IV, B, 1(c).

At paragraph 8 of the Office Action, claims 17-38, and 42-44 were rejected under 35 U.S.C. §102 (b) as being anticipated by DeKoning, U.S. Patent No. 6,148,368, issued on November 14, 2000.

The present invention, as set forth in representative claim 17, comprises in part:

17. A method for controlling storage of data in a plurality of storage devices each comprising storage blocks configured in a plurality of parallel stripes, the method comprising:

buffering a plurality of write requests associated with data blocks for a single write transaction;

PATENTS
112056-0126
P01-1108

defining a group of storage blocks, the group comprising a plurality of storage blocks in each of the plurality of storage devices; and

mapping each data block with a respective one of the storage blocks across the plurality of stripes, for transmitting the mapping to a storage device manager for processing of the single write transaction.

DeKoning discloses a method for accelerating disk array write operations using segmented cache memory and data logging. In DeKoning, write commands are first buffered to the cache segments, and later accumulated into a cache extension disk region at a later time, such as when the disks are idle. The accumulated write requests are the write commands combined into “larger write requests (e.g. RAID stripe writes)” (Col. 8, Lines 4-7, emphasis added) to spare the storage system from the write penalty of multiple smaller writes. Notably, the accumulated write request is a single stripe write (Col. 2, Lines 21-25).

Applicant respectfully urges that DeKoning does not show Applicant’s claimed novel, ***“mapping each data block with a respective one of the storage blocks across the plurality of stripes, for transmitting the mapping to a storage device manager for processing of the single write transaction.”***

Applicant’s claimed invention is directed toward the mapping of data blocks with the storage blocks to which they will be written. Applicant claims buffering a plurality of write requests and combining them into a single write transaction. In addition to this, however, Applicant goes one step further by mapping each data block of the single write request with a storage block across a ***plurality of stripes*** of the storage system before transmitting the buffered write request to a storage device manager. In this way, the storage device manager is not required to map each data block to a storage block of the storage system across the ***plurality of stripes***, as it would have conventionally been required to do. Particularly, Applicant’s claimed invention is not limited to sending single stripe

PATENTS
112056-0126
P01-1108

write transactions as DeKoning is, but sends write requests as mapped (associated) blocks spanning multiple stripes of the storage devices.

Applicant respectfully points out the following excerpts from the Specification of the present invention to further explain the novel claimed invention:

In a preferred embodiment, the invention features a file system that supports *coordinated writes to multiple stripes*. The file system receives write requests and disk topology information. The file system creates the block layout information responsive to the disk topology information and the write request, and thus prepares a single I/O write transaction for processing by a RAID layer. (Page 16, Line 29 – Page 17, Line 3, *emphasis added*)

And further:

The block layout information 15 is forwarded to the disk array manager 13 for processing of the write transaction. The disk array manager 13 receives the write transaction request, which includes the block layout information 15 that identifies one or more stripes for the single write transaction. *Prior art systems, in contrast, typically send single stripe write transactions to a RAID layer. Features of the invention thus enable forwarding of a complete write transaction to a RAID layer.* (Page 19, Lines 19-27, *emphasis added*)

DeKoning does not address mapping data blocks with storage blocks across a plurality of stripes for transferring a single write transaction, but instead merely discusses the use of buffering smaller write requests into a larger write request, such as a RAID (single) stripe write.

Notably, DeKoning states in its Background that:

It is advantageous to accumulate small data I/O requests in cache memory so that the aggregation of their data may be written to the disk array as a single "stripe write" (an operation involving all disks of the array

PATENTS
112056-0126
P01-1108

in parallel operation). Striping large data I/O requests across many disks allows parallel access allows quick reading or writing of large amounts of data. If a write-back-cache is present, then writes can be deferred, thus minimizing the write Penalty. With a large write-back cache, data can accumulate in cache and be consolidated into a single write so that only one read-modify-write sequence and disk seek and rotation operation needs to be done for multiple consolidated writes. (Col. 2, Lines 21-33, emphasis added)

DeKoning continues this discussion by suggesting that there is a need to solve various problems involved with management of the cache memory.

Examiner cites to the paragraphs contained between Col. 7, Line 45 and Col. 8, Line 13 of the DeKoning patent as a basis for rejection under 35 U.S.C. §102. Particularly, the DeKoning patent states therein that: "The logged information includes the write data as well as metadata identifying the destination of the write data in the LUN to which it was addressed" (Col. 7, Lines 48-51).

However, as Applicant pointed out above, the DeKoning patent is directed to managing cache memories to combine multiple write requests into larger RAID (single) stripe writes. DeKoning clearly is solving a different problem than Applicant's claimed invention, as pointed out by the following statement in DeKoning:

Furthermore, storing write requests in cache-extension disk region 232, an extension of the log structure in segments 235, 236, and 238,, as opposed to storing it in main disk region 234, allows further deferring of writing to main disk region 234 and the RAID write penalties associated therewith. Thus complexities and latencies of mapping data to main disk region 234, which may be configured as a RAID level 5, may be deferred until quieter periods. (Col. 10, Lines 30-38, emphasis added)

In summary, DeKoning combines multiple write requests into a single ordinary stripe write request. In sharp contrast, Applicant claims a further step, mapping the multiple write requests with the actual storage blocks across a plurality of stripes on the disks to which they are to be written.

PATENTS
112056-0126
P01-1108

Applicant respectfully urges that the DeKoning patent is legally precluded from anticipating the claimed invention under 35 U.S.C. §102 because of the absence from the DeKoning patent of Applicant's "*mapping each data block with a respective one of the storage blocks across the plurality of stripes, for transmitting the mapping to a storage device manager for processing of the single write transaction.*"


All independent claims are believed to be in condition for allowance.

All dependent claims are believed to be dependent from allowable independent claims, and therefore in condition for allowance.

Favorable action is respectfully solicited.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,


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